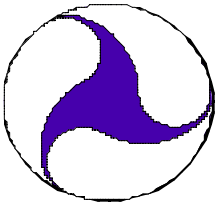
Module 7A – Operations and Management → Instructors Guide

M7A.1: Cover Slide

Module 7A
Operations and Management



M7A.2: Module Objectives **(2 min)**

Module Objectives

- **Pro-actively manage transportation system, not deploy "something"**
- **Describe how ITS supports effective operations and management**
- **Operations and management should be considered throughout planning and deployment process**

Delivery:

- Explain
  - "Bullet" points listed on this slide provide the framework for subsequent presentation/discussion within this module
  - Description/explanation for each "bullet" will follow shortly
  - Need to think "outside-the-box" when considering ITS operations management
  - Need to identify all of the issues to take under consideration
    - *For example, staff resources (e.g., availability, skills, experience, desire-to-learn, career paths, etc.), training needs, financial resources, costs, scheduling, introduction into budget cycles, agency roles and responsibilities, etc.*
  - ISTEA
    - Focuses on mobility of people, goods, and services
    - Improved throughput for system
    - Improved efficiency/effectiveness
      - *Just-in-time delivery*
      - *Transit vehicles become time competitive*
  - **STATE:**
    - "Benefits of ITS accrue when effectively operated and maintained → not just when deployed…"

        - For example, if a new roadway is built and not maintained very well for 5 years it will still provide 80%+ of its capacity
        - If an ITS system is not operated and managed effectively, it may have 0% effectiveness in 6 months
    - Instructor facilitates discussion (if any)

Output:

- N/A

Notes:

- Do not "dawdle" on this slide → move on!!

M7A.3: Operations Management Functions (10 min)

Operations and Management Functions

- **What are typical operations and management functions in your organization?**

Delivery:

- **ASK:**
  - "What are typical operations and management functions in your organization?"
- Instructor asks for volunteers to list a "typical" response
- Instructor then synthesizes responses and compiles list on a flip-chart **(FC-7A-1)**

FC-7A-1

Typical Operations and Management Functions

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- ↓

- Instructor facilitates discussion
- Operations and management has consistently been the "Achilles heel" of effective use of technology

- Note --> use of words “operations and management” are specifically used to indicate a high level of importance
- More than “repair it when it breaks” but proactive steps to provide maximum service from deployed systems

Output:

- List of typical operations and management functions for entire class **(FC-7A-1)**

Notes:

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Practical Operations and Management Applications

- Communicate and coordinate
- Develop and enhance skills
- Identify roles and responsibilities
- Plan for the future
- Enhance software and hardware
- Share information
- Perform maintenance

Delivery:

- Explain
  - These are the areas of expertise which are needed today
  - This list is typical → not exhaustive
  - Do not read/list all of the items → highlight a few "key" points
- Instructor facilitates discussion

Output:

- N/A

Notes:

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M7A.5: Typical ITS Functions **(1 min)**

Typical ITS Functions

- Callbox and 911 dispatch centers
- Revenue collection systems
  - Toll booths
  - Automated revenue collections
- Transit services
  - Dispatching
  - Schedule adherence
  - Information requests

Delivery:

- Explain
  - This list is typical → not exhaustive
  - Do not read/list all of the items → highlight a few "key" points
  - Note that automated revenue collection also reduces an agency's need to handle money, which is a major operations activity
  - Note that managing a call box, 911, or *77 response center places heavy staffing demands of a type not generally dealt with by traffic management agencies

Output:

- N/A

Notes:

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M7A.6: Typical ITS Functions (cont.) **(1 min)**

Typical ITS Functions (cont.)

- Freeway management system
  - Detect incidents
  - Control ramp metering
  - Coordinate freeway operations with surface street operations
  - Provide traveler information
  - Coordinate with EMS

Delivery:

- Explain
  - This list is typical → not exhaustive
  - Do not read/list all of the items → highlight a few "key" points

Output:

- N/A

Notes:

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M7A7: Typical ITS Functions (cont.) **(1 min)**

Typical ITS Functions (cont.)

- Arterial traffic management system
  - Adjust signal timing during special events or incidents
  - Control field devices (e.g., CCTV, VMS, HAR)
  - Maintain signals
  - Develop timings
  - Coordinate with incident management

Delivery:

- Explain
  - This list is typical → not exhaustive
  - Do not read/list all of the items → highlight a few "key" points

Output:

- N/A

Notes:

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M7A.8: ITS Functions **(5 min)**

ITS Functions

- **Computer hardware/software requirements are unique**
  - **Operating system version upgrades**
  - **Other software version upgrades**
  - **PC hardware replacement at frequent intervals (< 3 years)**
  - **Database maintenance essential**
  - **Configuration management**

Delivery:

- Explain
  - These types of activities begin to expand the concept of operations and management beyond traditional roles
  - Computer hardware obsolescence rate escalating
  - Computer software version updates increasing
  - Not a capital investment but more than traditional O&M
  - Need to think and plan ahead
  - Methods to retrofit legacy systems are aided by these concepts
  - "Configuration management" implies that an area has selected an architecture and that projects are designed to fit within that framework
- Instructor facilitates discussion

Output:

- N/A

Notes:

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M7A.9: ITS Functions **(3 min)**

ITS Functions

- **Maintain:**
  - **Telecommunications infrastructure**
  - **Traffic signals**
  - **Other traffic management elements (e.g., ramp meters, signs, detectors, etc.)**
  - **Computer systems**
  - **Transit vehicles**
  - **Requires 24-hour commitment**
  - **Map database**

Delivery:

- Explain
  - This list is typical → not exhaustive
  - Do not read/list all of the items → highlight a few "key" points
  - Note new items such as maintaining an "electronic" map database can require a significant commitment

Output:

- N/A

Notes:

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M7A.10: "New" Considerations (3 min)

"New" Considerations

- Multi-agency coordination
- Multi-agency "systems"
- Maintaining regional compatibility
  - Configuration management
- Multi-agency procurement, operations and management
- "Virtual" control centers

Delivery:

- Explain
  - Need to think about operations and management on more than just on an agency basis
  - Regional needs should be considered
  - How do you select what is best for everyone…
  - For "virtual control centers" note that when we discuss coordination, it does not have to mean one building → the coordination may occur "electronically" creating the operational impact of a center
- Instructor facilitates discussion

Output:

- N/A

Notes:

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M7A.11: Traditional Skill Areas (5 min)

Traditional Skill Areas

- Dispatch
- Electrical maintenance (traffic signals)
- Trouble shooting
- Bus mechanics
- Construction trades
- Administration

Delivery:

- Explain
  - This list is typical → not exhaustive
  - Do not read/list all of the items → highlight a few "key" points

Output:

- N/A

Notes:

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M7A.12: ITS Skill Areas **(2 min)**

ITS Skill Areas

- **ITS Infrastructure management**
  - **Computer technicians**
  - **Software maintenance**
  - **Optical communications maintenance**
  - **Telecommunications maintenance**
  - **Digital electronic hardware maintenance**
  - **Television equipment maintenance**
  - **Configuration management**

Delivery:

- Explain
  - Note that ITS requires skills significantly beyond those exposed on the earlier list
  - This list is typical → not exhaustive
  - Do not read/list all of the items → highlight a few "key" points

Output:

- N/A

Notes:

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M7A.13: Representative Roles an Responsibilities – Agency

(1 min)

Representative Roles and Responsibilities—Agency

- **Public agency may provide or contract for:**
  - **Operations**
  - **Maintenance**
- **Larger agencies may support "smaller" ones**
- **Multi-agency "cooperative" use of contractor support**

Delivery:

- Explain
  - Provide examples from your own experience
  - Typical components of an operations management program
    - *Physical facility*
    - *Administration*
    - *Operations*
    - *Maintenance*
    - *On-call support services (contract or in-house*
  - Lexington, KY is an example of a smaller agency that is being proactive in operations and management --> it does not have to be a "big city"

Output:

- N/A

Notes:

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M7A.14: Operations and Management Decisions (1 min)

Operations and Management Decisions

- Consider specific alternatives
- Ask key questions
  - similar to procurement
- Consider advantages/disadvantages

Delivery:

- That there is a "process" for helping you to "make-a-decision"
- That involving the right people at the right time is "key"
- The main thing is to ask and answer the questions so that a reasoned decision is reached

Output:

- N/A

Notes:

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M7A.15: In-House Operations Management -- Advantages (1 min)

Potential In-House Operations and Management—Advantages

- Agency maintains control of:
  - Operations and management
  - Management priorities and practices
- Dedicated staff develops "pride-of-ownership"
- Local fixed base of operations

Delivery:

- Explain
  - This list is typical → not exhaustive
  - Do not read/list all of the items → highlight a few "key" points
  - Provide examples from your own experience

Output:

- N/A

Notes:

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M7A.16: In-House Operations Management – Disadvantages (1 min)

Potential In-House Operations and Management-Disadvantages

- Difficult to obtain appropriate blend of skills in small agencies
- High start-up costs for capital equipment, staff training, test equipment, and spares inventory
- May require contract support for specialty elements

Delivery:

- Explain
  - This list is typical → not exhaustive
  - Do not read/list all of the items → highlight a few "key" points
  - Provide examples from your own experience

Output:

- N/A

Notes:

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M7A.17: In-House Operations Management – Disadvantages (cont.)
(1 min)

Potential In-House Operations and Management-Disadvantages (cont.)

- Agency maintains responsibility for claims
- Staffing and training present unique challenges
- May have higher costs (guaranteed retirement benefits, etc.)
- Salary competition for trained staff

Delivery:

- Explain
  - This list is typical → not exhaustive
  - Do not read/list all of the items → highlight a few "key" points
  - Provide examples from your own experience

Output:

- N/A

Notes:

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M7A.18: Contract Operations Management -- Advantages (1 min)

Potential Contract Operations and Management—Advantages

- A single contractor may provide a full range of services
- Contractor provides:
  - Trained staff
  - Capital and equipment
- Cost may be lower than in-house maintenance (especially for smaller agencies)

Delivery:

- Explain
  - This list is typical → not exhaustive
  - Do not read/list all of the items → highlight a few "key" points
  - Provide examples from your own experience
  - Used by many transit agencies

Output:

- N/A

Notes:

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M7A.19: Contract Operations Management – Advantages (cont.) (1 min)

Potential Contract Operations and Management—Advantages (cont.)

- Contractors maintain insurance to protect agency from contractors' negligent acts or omissions
- May broaden funding opportunities
- Union/employee agreements

Delivery:

- Explain
  - This list is typical → not exhaustive
  - Do not read/list all of the items → highlight a few "key" points
  - Provide examples from your own experience

Output:

- N/A

Notes:

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M7A.20: Contract Operations Management – Disadvantages (1 min)

Contract Operations and Management—Disadvantages

- Unavailability of local, skilled contractors
- May require extensive agency supervision
- Contractor may have to balance priorities of multiple agencies

Delivery:

- Explain
  - This list is typical → not exhaustive
  - Do not read/list all of the items → highlight a few "key" points
  - Provide examples from your own experience

Output:

- N/A

Notes:

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M7A.21: Additional Methods of Providing Needed Resources (1 min)

Additional Methods of Providing Needed Resources

- **Vendor/supplier support agreements**
- **Software/hardware support is valuable—don't expect free support from vendors beyond a reasonable warranty period**

Delivery:

- Explain
  - This list is typical → not exhaustive
  - Do not read/list all of the items → highlight a few "key" points
  - Provide examples from your own experience
  - Agreements with other public agencies
  - On-site contractors
  - On-call contractors
  - Monthly/annual management contracts
    - *Not suited to tasks requiring unpredictable amounts of work (e.g., snow removal)*
    - *Well-suited to routine tasks where performance can be closely monitored*

Output:

- N/A

Notes:

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M7A.22: Available Options **(5 min)**

Available Options

- **Which points are the most valid? Why?**
- **Are any invalid? Why?**

- **Are we doing a good job at Operations and Management?**

Delivery:

- **ASK:**
  - "Which points are the most valid? Why?"
  - "Are any invalid? Why?"
  - "Are we doing a good job at operations and management?"
- Instructor facilitates discussion
- Remember our comment that this has often been the "Achilles heel" of effective use of advanced technology

Output:

- N/A

Notes:

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M7A.23: Examples **(5 min)**

Examples

- New York Information for Motorists (INFORM)
- Chicago Incident Management
- Los Angeles Motorist Services

Delivery:

- Explain
  - INFORM
    - *Major freeway and arterial traffic management system on Long Island*
    - *75 CMS, ramp meters, and coaxial cable network*
    - *24/7 operations*
    - *10-year history*
    - *TOC operated by contract*
    - *CMS, loops, and communications maintained by contract*
    - *Signals maintained by agency*
    - *TOC operator dispatches both*
  - Chicago Incident Management
    - *Major, proactive management of incidents and motorist services*
    - *Majority of response handled by Illinois DOT staff and equipment*
    - *Equipment tailored specifically to rapid removal of incidents, including heavy trucks*
    - *Excellent staff morale*
  - Los Angeles Motorist Services
    - *Provides 1st level motorist services and incident response (no heavy trucks)*
    - *Dispatched by Highway Patrol and Caltrans*
    - *Dedicated to freeway network*

        - *Uniform vehicles and equipment*
        - *<u>All</u> by contract, with several contractors used for various segments*
        - *Financed by $1 annual vehicle registration surcharge*
    - Note all are different, all are effective → there are options
- Instructor facilitates discussion

Output:

- N/A

Notes:

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M7A.24: Staff Training and Education **(3 min)**

Staff Training and Education

- Assess staff motivation to perform new tasks and learn new skills
- Verify staff can benefit from training
- Identify realistic training objectives
- Continue training throughout process

Delivery:

- Explain
  - Identify appropriate training and certification programs
  - Budget staff time and resources for participation in advance
  - Encourage staff to apply newly learned skills
  - Encourage staff to further develop skills

Output:

- N/A

Notes:

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M7A.25: Overcoming the Hurdles (1 min)

Overcoming the Hurdles

- Proactive approach
- Fund operations and management at an appropriate level
- Provide functional and attractive work environment
- Develop career paths for staff
- Empower staff

Delivery:

- Explain
  - This list is typical → not exhaustive
  - Do not read/list all of the items → highlight a few "key" points
  - Provide examples from your own experience
  - Encourage innovation
  - Offer educational opportunities
  - Acknowledge success
  - Do not let operations and management be an oversight!!

Output:

- N/A

Notes:

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M7A.26: Roles and Responsibilities **(1 min)**

Roles and Responsibilities

- Your agency
- Budget
- Unique elements
- Inter-agency operations and management challenges
- Recruiting and training
- Strategies to overcome problems
- How do we do this better?

Delivery:

- **ASK:**
  - "What is the case in your agency?"
- Instructor facilitates discussion

Output:

- N/A

Notes:

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